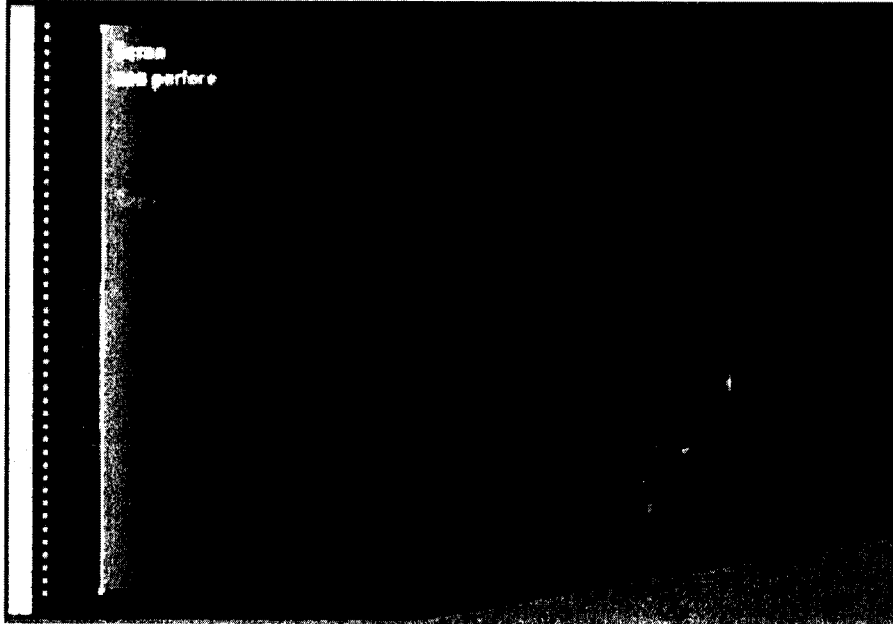


# Is there a future without perforations?



Regular tea drinkers who have been subject to the blandishments of the advertisers for years will be familiar with the claim that 'It's those little perforations that make all the difference', and real experts may know that the best tea bags can have up to 2000 perforations. The situation isn't totally different in our own industry, where it has been the accepted wisdom for decades that the only way to enjoy proper cinema sound from the centre of the action is via speakers mounted behind the screen, necessitating perforated screens to allow the sound through. Numerous articles in Cinema Technology over the years have explained the need to balance the size and distribution density of the perforations to provide the best sound together with the minimum light loss - the greater the area of the perforations, the less light will be reflected from the screen. When particularly high-powered audio sources are used behind the screen, there can also be problems with the air movement from the speakers causing areas of the screen to distort by small amounts, but sufficient to noticeably affect the images on huge screens.

In recent years the ability of sound specialists to achieve wonderful 'surround sound' effects, and to fool our senses by apparently moving sound sources around an auditorium and even over our heads has led several people to query the accepted wisdom that cinema sound needs to actually come through the screen surface, and to ask whether it wouldn't be possible to use surround sound techniques to make the cinema sound appear to come from the centre of the screen by cunning electro-acoustic techniques. Virtually every one of the experienced cinema sound people that I have spoken to (and a good many people in the projection business too) have told me that history has shown that it just isn't possible to get good dialogue and sound from the centre of the picture without a perforated screen, and many attempts have been made to have speakers mounted above and around the screen, all without achieving results as good as those from speakers mounted behind a perforated screen. In recent years demonstrations of the relatively new concept of actually making a non-perforated screen into a membrane from which the sound is emitted over the whole surface area have tended to support this contention, since the results have invariably been of much lower audio fidelity than any modern cinema provides, although perhaps acceptable in some home cinema and boardroom presentation situations.

Could this situation be about to change? At recent European trade shows, including IBC and CineExpo, and in comparative tests at one of the major postproduction houses in Burbank, a company called Showmax Cinema has been giving some interesting demonstrations to back up their claims that they now have a new technology that allows the use of a non-perforated PVC screen, and that they can meet existing cinema sound standards. Showmax Cinema have patented their system, and it is currently installed in over 20 venues, including screening rooms, editing and mixing studios, and movie theatres, including one in Sweden.

Showmax Cinema accept that previous non-perforated screen sound systems have not been of top quality, particularly those using textile screens - they say that the reflected images cannot be as good on these screens as on their smooth PVC ones, and that medium and high frequency sounds have to pass through the textile screen material, leading to lack of directivity and softening of high frequencies. The new system uses three to five audio transducers, according to the number of channels required, mounted behind the PVC screen, on the screen frame or on the wall behind the screen. The transducers, which have soft, flexible edges, are adjusted so that they just touch the screen, without deforming it, and effectively 'stick' to the screen by 'viscous adhesion' - c.f. with two sheets of glass on top of each other. Each transducer is 66cm high x 17cm wide x 30cm deep, providing 60 degree x 40 degree horizontal and vertical directivity. It will be seen that the sound is emitted only from a relatively small part of the screen area. This can enable the all-important 'centre sound' to be carefully managed, also making it easier to manage the centre-left and centre-right channels.

As the transducers are used only for mid-range and high frequencies the vibration of the screen in contact with the transducer is less than .003 inches, which is much lower than the natural vibrations induced by the bass and sub-woofers on the screen.

Showmax Cinema are using the marketing ploy that the coming of digital cinema presents an excellent opportunity to change the way in which cinema sound is presented, and I thought that it might be interesting for Cinema Technology readers to learn something about their system.

The following material was provided by Showmax Cinema, and they are keen to invite potential users to attend demonstrations of their system. I invite any readers who may take the trouble to attend such demonstrations in the coming months to tell us about their experiences and their conclusions.

## SHOWMAX CINEMA

If studios and exhibitors are going to skip to digital projection soon, there are two remaining issues which may prevent them from transforming this investment into a clearly perceived improvement in the value that the moviegoer experiences.

The first issue is that digital projection so far applies only to improvements in the image. The sound and image experience are intimately tied together, and if you improve one point then the global experience is tied to the weakest one. Ideally, digital projection should improve both sound and image.

The second issue is that the image improvement is not as clearly perceived as it might be by the moviegoer because of the perforated screens that are universally used. What prevails is not what comes from the projection box but what comes from the screen after reflection, and the perforations reduce the image quality coming from the projector. Perforated screens can cause loss of contrast range, loss of texture, colour discrepancies and moiré effects - all are induced by the perforations, even with micro perforated screens.

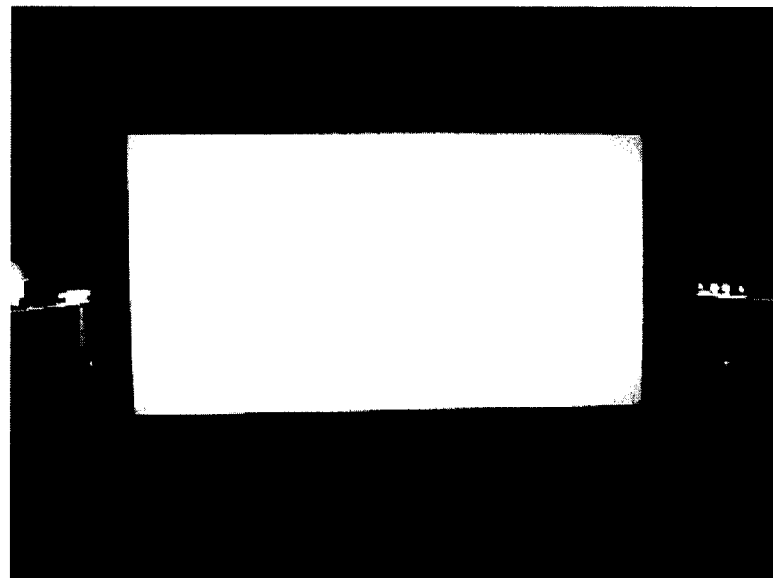
We have developed a new, patented technology, Showmax Cinema, which uses a classical PVC cinema screen, but without perforations, to provide excellent images and to improve the sound experience. The gain of the screen is 1.0, with 160 degree directivity, and the absence of perforations (which can take up between 4 and 7% of the surface area as well as leading to a loss of contrast) can result in a 15-20% improvement in perceived brightness levels for a given xenon lamp power.

Perforations are usually necessary in order to let the medium and high audio frequencies pass through the screen. Our technology works in a completely different way. It consists in applying a set of specific transducers just behind the non perforated screen, so that the screen itself effectively becomes the set of speakers for medium and high audio frequencies. Our work has shown that the system is fully compliant with the cinema industry standards on Sound (ISO 2969 Xcurve).

This technology was launched nearly six years ago, and has been proved to be flawless since that time. We have customers in France and Sweden including studios (included colour grading rooms and mixing auditoriums) and cinema theatres, including premier screening rooms and a movie theatre with a 200 square metre screen

### *How does Showmax answer the 1st issue?*

As the medium and high frequency sounds come directly from the screen and not through the holes of the screen, there are fewer disturbances and drift effects, and the medium and high frequency sounds



The screen at Cinéma Max Poissy which is fitted with the Showmax Cinema solid pvc screen and transducers

are reproduced more accurately and with a wider dynamic range. Recognized sound designers are already using our technology, they also appreciate the precision of the sound spatialization and the clearness of the sound which appears to be coming from the image, as in the real life.

### *How does Showmax answer the 2nd issue?*

A/B testing was completed recently in Burbank-California by applying our non perforated screen over half of a micro perforated one.

By comparing the results they noticed that:

- The contrast and the colours were much more real on our Showmax Cinema piece of screen
- The further away from the centre of the screen the more the ray is oblique to the screen and the more the micro perforations could be seen to alter the contrast and colour fidelity.

### **Conclusion:**

Showmax provides a new sort of "Digital Sound Screen" which enables the investment in digital cinema to be easily perceived as a real value improvement by moviegoers.

Another Showmax advantage is that the screen is washable. Since in many cases the move to digital projection will require the purchase of a new white screen, this could be an ideal opportunity for investing in a Showmax screen.

Having expressed my reservations and those of several colleagues about the perception of non-perforated screens in the cinema business to Maximilien Brabec, Business Development Manager of Showmax, he readily accepted that he still has a major task to convince the cinema industry. He says that the technology is a sort of revo-

lution in sound and image and it naturally induces adoption hurdles, but from his experience with the existing preview theatres and installations he is convinced that those who are 'early adopters' of new technologies in the cinema business will soon be ready to give Showmax a try.

Jean Coudier, a well known award-winning sound director in France, who works with people including Roman Polanski on Oliver Twist, Oliver Stone, Patrice Leconte, Jean Paul Rappeneau and many other French Directors, is an eager convert to the new technology, and provided an interesting interview about the Showmax system.

Q: How did you discover Showmax?

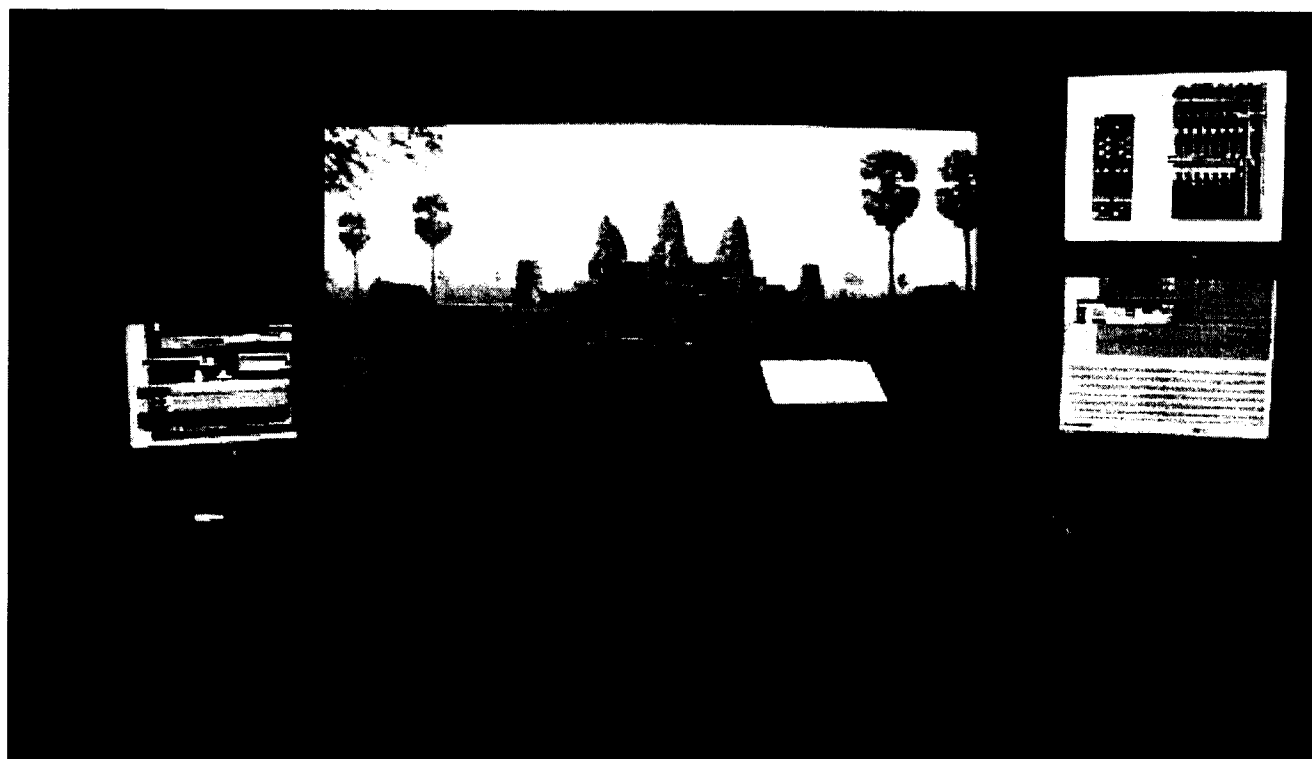
J.C.: A couple of years ago, I was working on Dogora with Patrice Leconte, for which I had to travel to Cambodia, taping high quality sound in double MS stereo four tracks. This had to be done with the greatest care, since the whole movie is a musical without dialogue. The challenge was to blend sounds within a rather gripping opera piece. This implied a great precision in the recording of the sounds as well as the editing and design.

I therefore prepared a rough cut, before

A/B testing in Burbank, California  
Showmax non-perforated screen applied over half of a micro-perforated one

Ecran perforé traditionnel

SHOWMAX  
CINEMA



Jean Goudier's 'Salle de Montage' in Boulogne, which uses the Showmax Cinema system

moving to the Club-De-l'Etoile-Theater, which is equipped with the Showmax System, and was absolutely amazed at the quality and precision of all I had added in the music that was recorded in 5.1. It was extremely rich and dynamic. The relation between dynamics was magnified and extremely correct, so much so that the speakers seemed to have disappeared and the sound felt like it was coming out of the screen itself, as a whole part of the project, not as a separate entity such as sound on one side and the image on the other.

This was a true revelation, not mystical but professional. I equipped my studio with the Showmax system, as soon as I could and my work has benefited greatly since then. I can work left, centre, right in a very precise way.

It is very important to have efficient equipment to work with that you can trust.

All the work that you do gets faithfully translated at the end.

Q: And since then, what are the benefits you enjoyed the most with Showmax ?

J.G.: I have since then worked on many movies and I always have total faith in the work tool that is Showmax. I know for sure that I get all my work back on the final project. All the fine tuning and tweaking, previously unthinkable to me, I now do without hesitation, because I know that the balance is correct and that the highs and mids are correct and the spatialization is perfectly exact. No more bad surprises, only the guarantee that all works fine. What I do in the editing room matches the director's vision, he can now come and listen to the rough cuts before the mixing and get to hear exactly what will be heard in the final mix.

Q: You believe that the system is easier on the ear ?

J.G.: Indeed it is less tiring to the ear to listen to a Showmax version, probably because the balance is more correct and one doesn't have to create the lows, usually the case with more traditional system. I have to say that the precision of spatialization of Showmax system is absolutely divine. One doesn't feel like he is working in a

lab and the precision of the bass, mediums and trebles is simply marvellous. This is an irreplaceable tool for me and I couldn't work with any other system. Showmax is the most reliable and user friendly tool I ever had.


Q: In a general way, what can Showmax bring to the movie industry ?

J.G.: With the arrival of digital technology, we need to find a way to give even better performance than with conventional projection. The Showmax system is great, since it allows for a better experience in the projection room, compared to a standard one with perforated screen and all the implied aberrations between the screen and the speakers.

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